NOTE: If you own a 1985 or later model, first check the Supplement at the back of the book for any new service information.

CHAPTER FIVE

CLUTCH AND TRANSMISSION

This chapter includes service procedures for the centrifugal clutch, the transmission and the subtransmission (used on some models).

Tables 1-4 are at the end of the chapter.

CENTRIFUGAL CLUTCH

The clutch design varies among the different models. Each clutch type is covered in a separate procedure. Within each of the clutch assembly types there are variations, so pay particular attention to the location and positioning of the friction discs, the clutch plates and to any spacers, washers and springs. Make sure they are assembled in the correct location. Always refer to the exploded view drawing relating to the specific model and year on which you are working.

Operation

The centrifugal clutch is a wet multi-plate type which operates immersed in the engine oil. It is mounted on the right-hand end of the transmission main shaft. The drive plate is splined to the transmission main shaft and the outer clutch housing can rotate freely on the main shaft. The outer clutch housing is geared to the crankshaft by the primary driven gear. The clutch is released by gearshift pedal movement and engagement is achieved by centrifugal effect as engine speed increases.

The clutch release mechanism is mounted within the right-hand crankcase cover.

Removal/Disassembly (70 cc)

The centrifugal clutch shown in **Figure 1** is used on the 1973-1974 ATC70.

The centrifugal clutch shown in **Figure 2** is found on the 1978-on ATC70.

1. Drain the engine oil as described in Chapter Three.
2. Remove the bolts securing the right-hand crankcase cover. Hold the rear brake lever down and remove the cover and the gasket. Don't lose the locating dowels.
3. Remove the ball retainer (**Figure 3**) and the spring.
4. Remove the oil guide and the spring (**Figure 4**).
5. Remove the clutch release lever (**Figure 5**).
6. Remove the cam plate assembly (**Figure 6**).

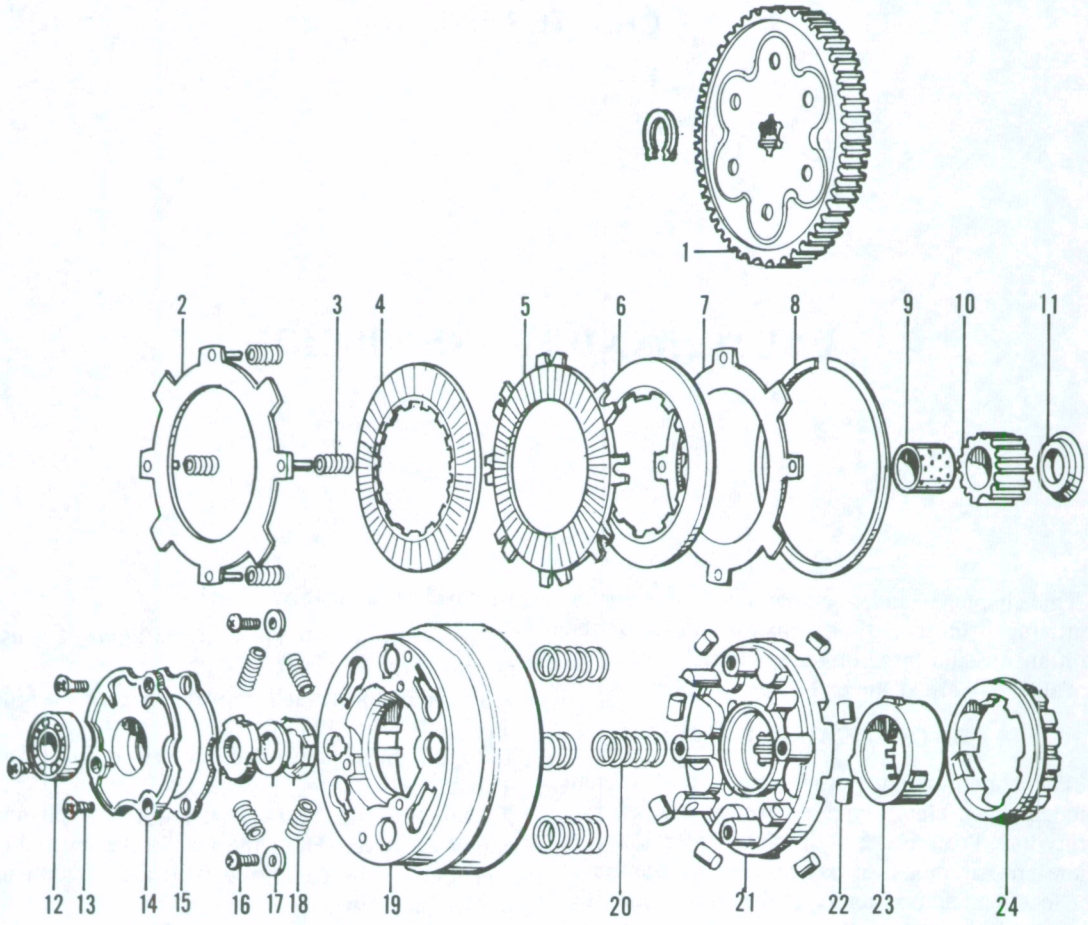
NOTE

The following steps are shown with the engine removed. The clutch outer housing can be removed with this assembly installed in the frame.

7. Remove the bearing (**Figure 7**) from the clutch outer cover.
8. Remove the screws (**Figure 8**) securing the clutch outer cover and remove the cover.
9. Straighten out the locking tab on the lockwasher.
10. Place a copper washer (or copper penny) into mesh with the primary driven gear and the primary drive gear. This will keep the clutch housing from

1

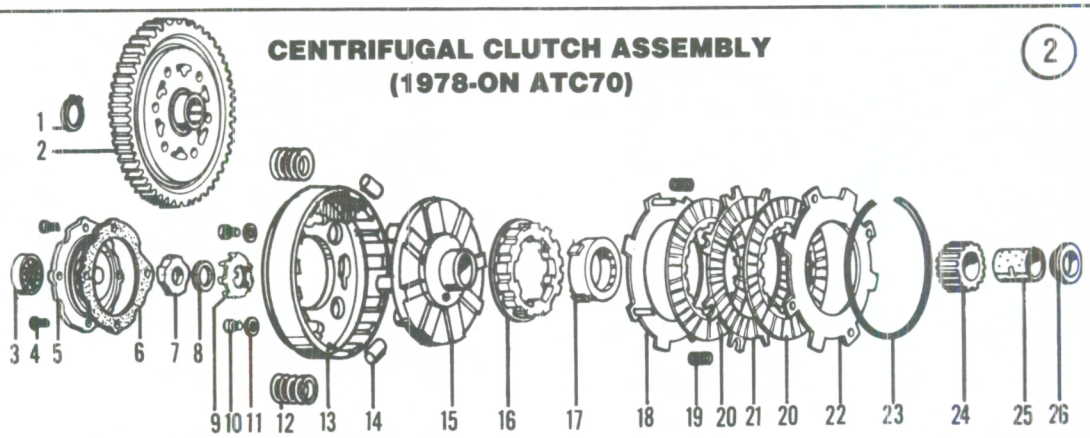
CENTRIFUGAL CLUTCH (1973-1974 ATC70)



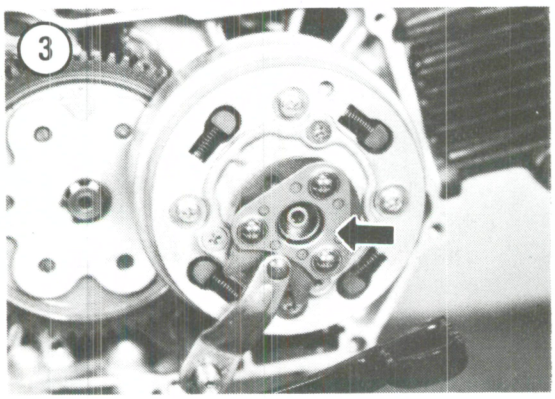
1. Primary driven gear
2. Clutch plate A
3. Spring
4. Friction disc A
5. Friction disc B
6. Friction disc A
7. Clutch plate B
8. Circlip
9. Center guide bushing
10. Primary drive gear
11. Collar
12. Bearing
13. Screw
14. Clutch cover
15. Gasket
16. Screw
17. Washer
18. Damper spring
19. Clutch outer housing
20. Clutch spring
21. Drive plate
22. Roller
23. Drive gear outer
24. Clutch center

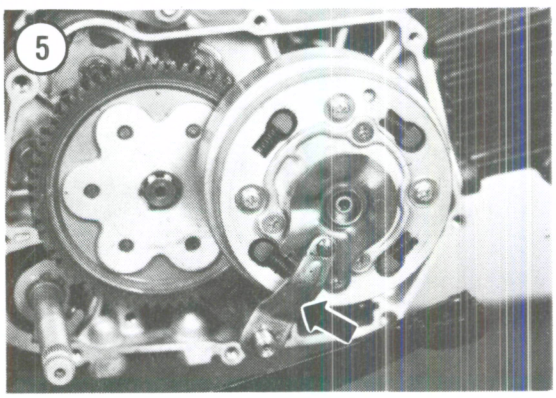
CENTRIFUGAL CLUTCH ASSEMBLY (1978-ON ATC70)

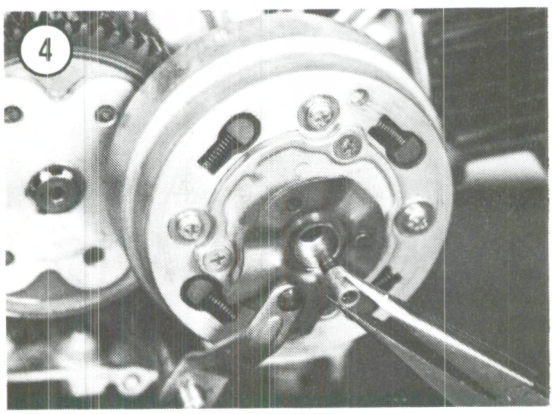
(2)

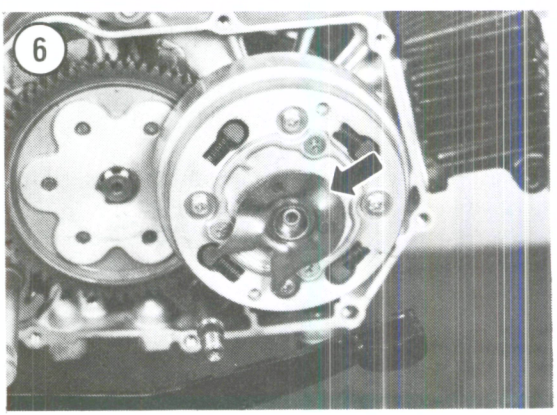


1. Circlip
2. Primary drive gear
3. Bearing
4. Screw
5. Clutch cover
6. Gasket
7. Locknut (14 mm)
8. Washer
9. Lockwasher
10. Screw
11. Washer
12. Clutch spring
13. Clutch outer housing
14. Roller
15. Drive plate
16. Clutch center
17. Drive gear outer
18. Clutch plate A
19. Clutch plate coil spring
20. Friction disc A
21. Friction disc B
22. Clutch plate B
23. Circlip
24. Primary drive gear
25. Center guide bushing
26. Collar









turning during the next step. If the engine is partially disassembled, install a socket drive extension or piece of smooth metal rod into the piston pin hole in the connecting rod to keep the crankshaft and clutch from turning.

NOTE

Clutch outer housing locknut removal requires a special tool available from a Honda dealer (14 mm Locknut Wrench part No. 07716-0010100) or the double pin spanner that is available from most motorcycle supply stores.

11. Remove the locknut, conical lockwasher and lockwasher securing the clutch outer housing.
12. Remove the clutch outer housing and the copper washer from the engine. The primary drive gear may stay in place on the crankshaft. There is no need to remove it.

NOTE

*If the primary drive gear does come off, don't lose the center guide bushing and collar (**Figure 9**) on the crankshaft. It is not necessary to remove them.*

13. From the backside of the clutch outer housing, press down on the clutch plate "B" (A, **Figure 10**).
14. With a screwdriver, work the set spring (B, **Figure 10**) out of the grooves in the clutch outer housing and remove the set spring.
15. Remove the clutch plates and friction plates from the clutch outer housing.

NOTE

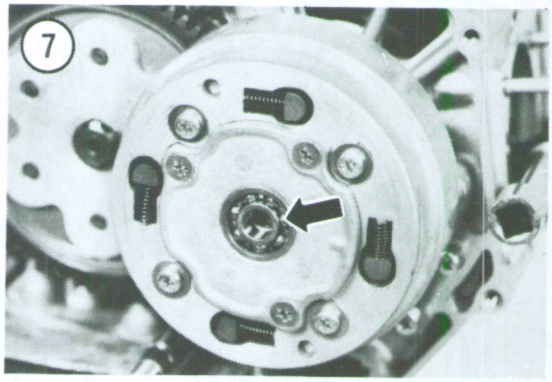
Don't lose the small coil springs mounted onto the pins on clutch plate "A".

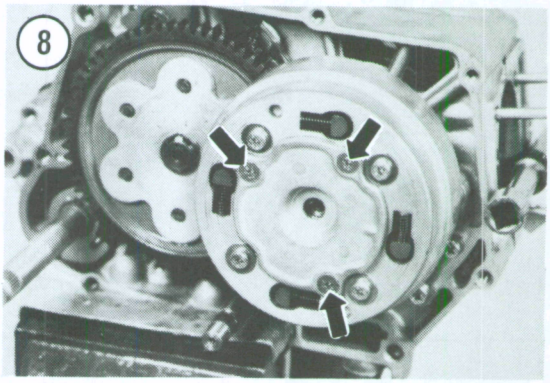
16. Remove the clutch center and the drive gear outer.
17. Remove the rollers from the drive plate.
18. Remove the damper springs (**Figure 11**) from the front of the clutch outer housing where they are indexed into the fingers of the drive plate.
19. Loosen the Philips screws (**Figure 12**) in a crisscross pattern and remove the screws and washers securing the drive plate to the clutch outer housing. Remove the drive plate and the drive plate springs.
20. Inspect the clutch components as described in this chapter.

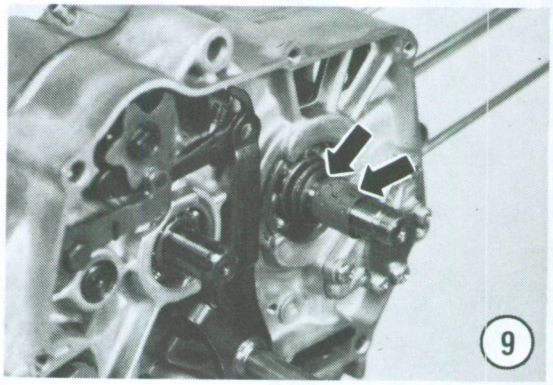
Assembly/Installation (70 cc)

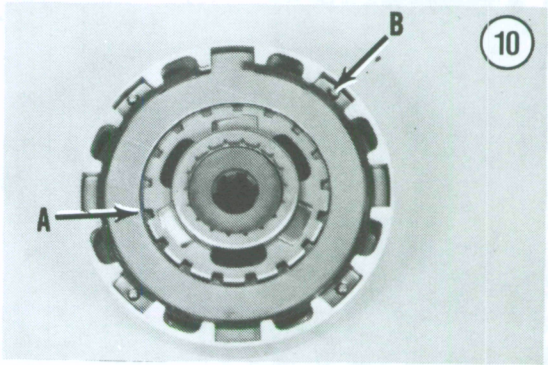
NOTE

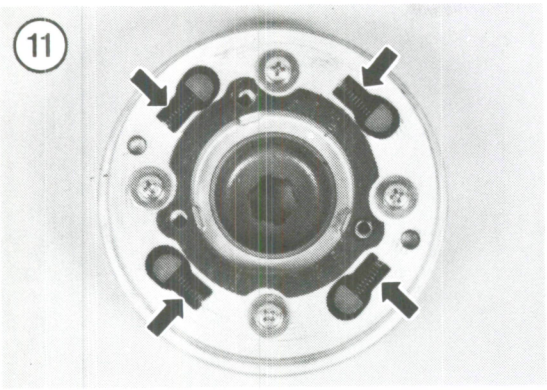
If either or both friction discs and clutch plates have been replaced with new ones, apply new engine oil to all surfaces to

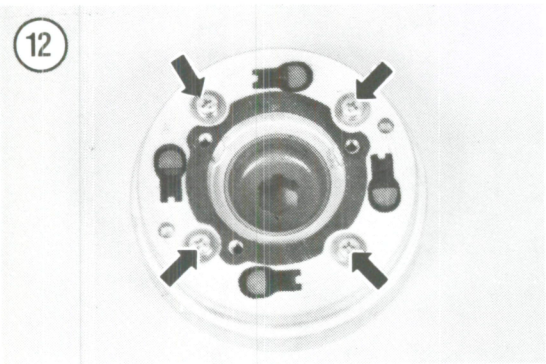


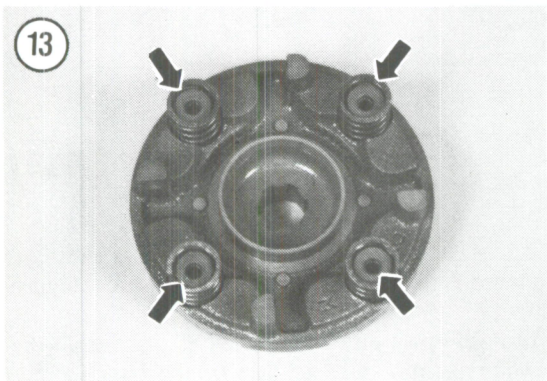


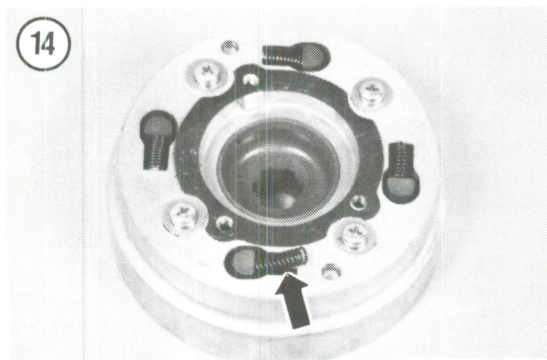


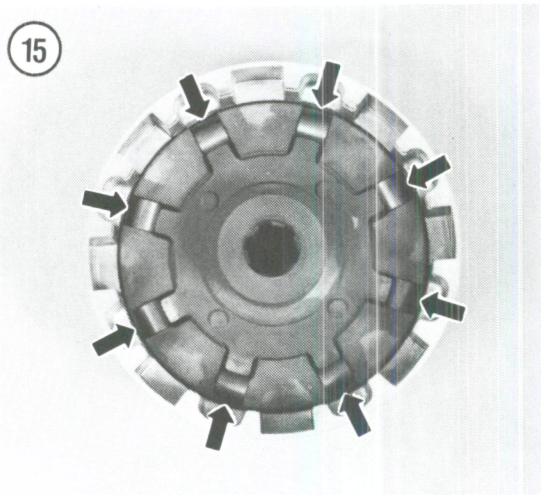


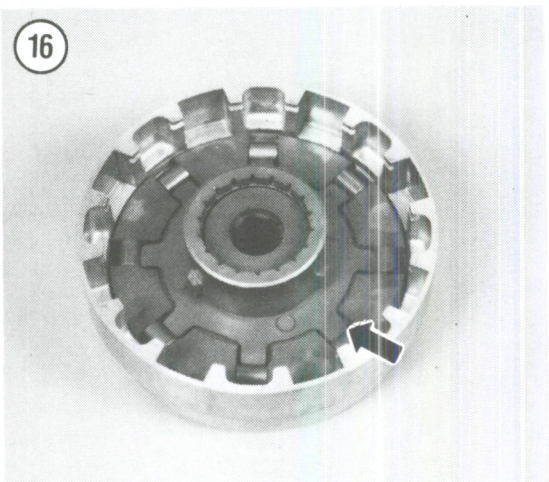






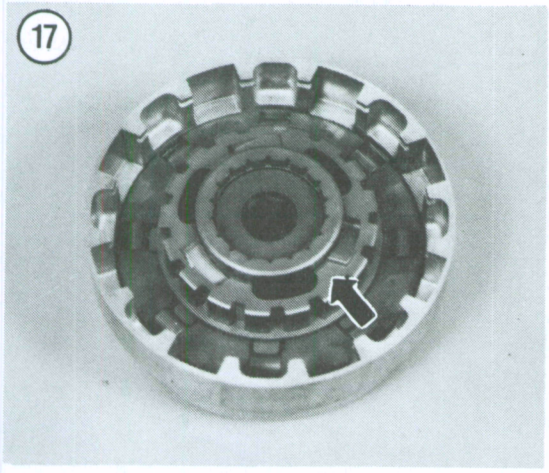


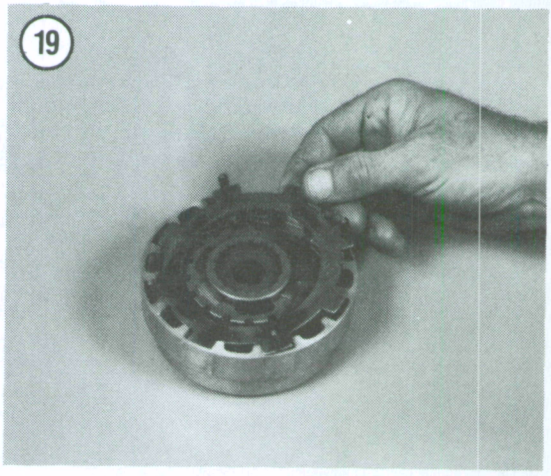


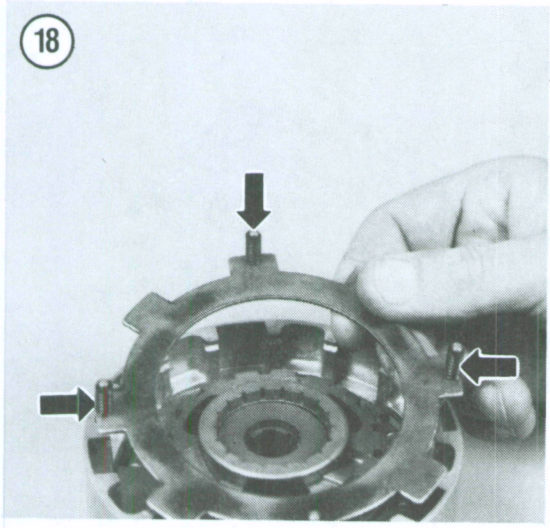


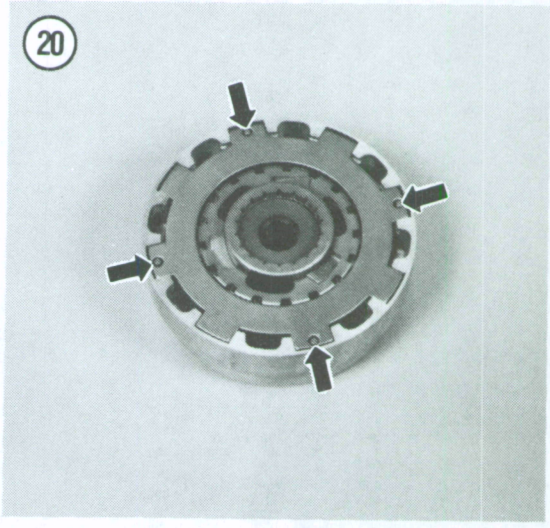
avoid having the clutch lock up when used for the first time.

1. Assemble the clutch outer housing on your workbench.
2. Install the drive plate springs (**Figure 13**) onto the drive plate.
3. Set the clutch outer housing onto the drive plate springs and the drive plate.
4. Install the Phillips head screws and washers. Securely tighten the screws in a crisscross pattern.
5. Install the damper springs into the front of the clutch housing and into the recesses in the fingers of the drive plate (**Figure 14**).
6. Turn the clutch outer housing over and install the drive plate.
7. Install all rollers into the recesses in the drive plate (**Figure 15**).
8. Install the drive gear outer (**Figure 16**) and the clutch center (**Figure 17**).









NOTE
Make sure the 2 parts mesh properly.

9. Install the small coil springs onto the pins on clutch plate "A" (**Figure 18**).

10A. On 1973-1974 models, install clutch plate "A" (**Figure 19**), friction disc "A," friction disc "B," clutch disc "A" and clutch plate "B." Make sure the small holes in the tabs on clutch plate "B" are indexed into the pins of clutch plate "A" (**Figure 20**).

NOTE
Friction disc "B" has notches cut into all tabs to clear the small springs installed on clutch plate "A."

10B. On 1978-on models, install clutch plate "A" (**Figure 19**), the clutch friction disc "A," friction disc "B," another friction disc "A" and clutch plate "B." Make sure the small holes in the tabs are indexed into the pins of clutch plate "A" (**Figure 20**).

11. Push down on clutch plate "B" and install the set spring into the backside of the clutch outer housing. Work the set spring into the grooves in the clutch outer housing and make sure it is properly seated.

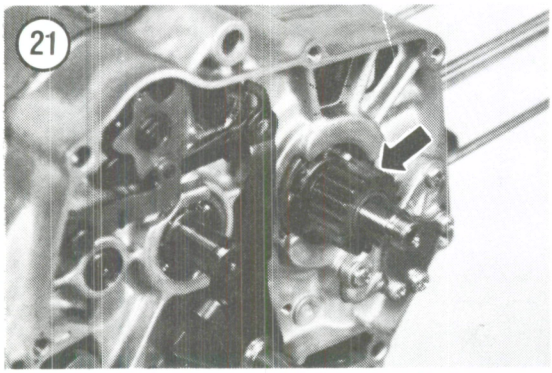
12. Make sure the center guide bushing and collar (**Figure 9**) are installed onto the crankshaft.

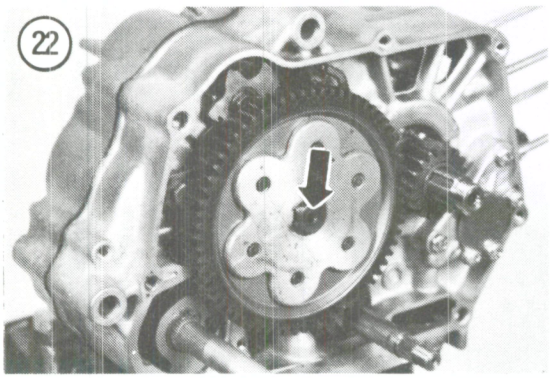
13. If removed, install the primary drive gear (**Figure 21**) onto the crankshaft.

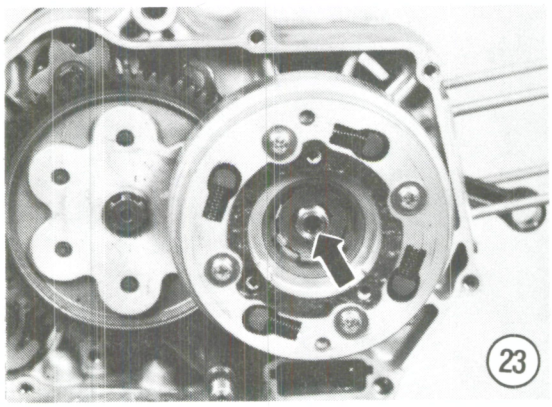
14. If removed, install the drive gear and circlip (**Figure 22**).

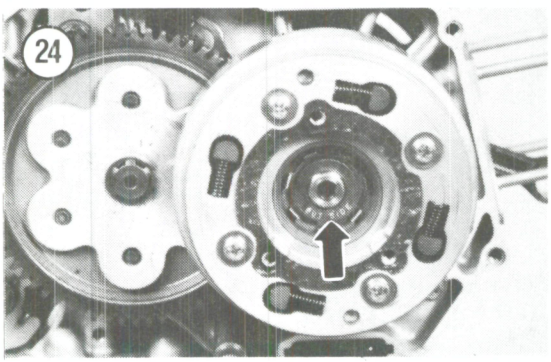
15. Install the clutch assembly onto the crankshaft.

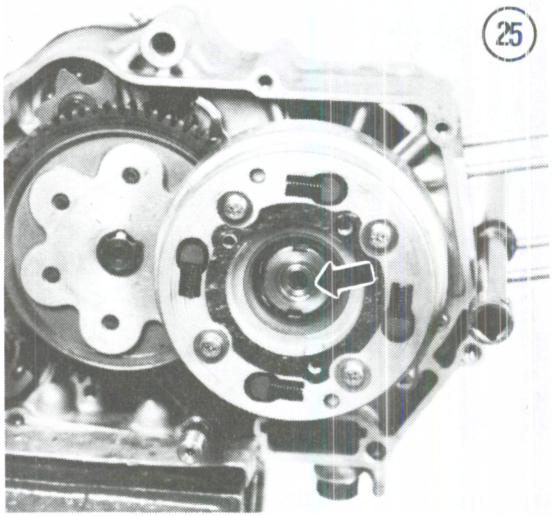
16. Install the lockwasher (**Figure 23**) and the additional conical lockwasher with the "OUTSIDE" mark (**Figure 24**) facing out toward the outside of the clutch assembly.

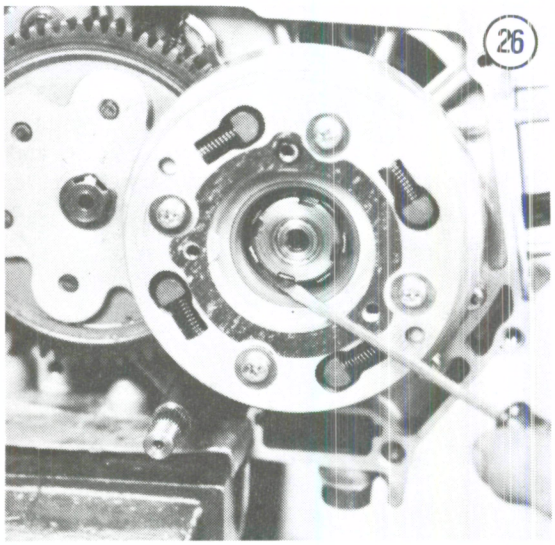




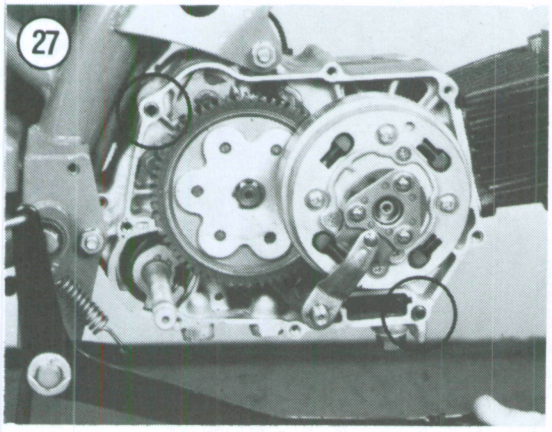








17. Place a copper washer (or copper penny) into mesh with the primary drive gear and the primary driven gear. If the engine is partially disassembled, install a socket drive extension or smooth metal rod into the piston pin hole in the connecting rod to keep the crankshaft and clutch from turning.
18. Install the locknut (**Figure 25**) and tighten to 35-45 N•m (28-33 ft.-lb.).
19. Bend one locking tab down into one of the grooves in the locknut (**Figure 26**). If the locking tab will not fit into a groove, tighten the locknut (*do not loosen*) until a locking tab will fit.
20. Install the clutch outer cover and new gasket. Tighten the screws securely.
21. Install the bearing (**Figure 7**) into the clutch outer cover.
22. Install the cam plate assembly (**Figure 6**).



23. Install the clutch release lever (**Figure 5**).
24. Install the spring and oil guide (**Figure 4**).
25. Apply a light coat of grease to the spring to hold the spring in place. Install the spring and the ball retainer (**Figure 3**).
26. Install the dowel pins (**Figure 27**) and a new crankcase cover gasket.
27. Hold the rear brake pedal down and install the right-hand crankcase cover. Install the screws and tighten in a crisscross pattern until they are secure.

CAUTION

Do not install any of the crankcase cover screws until the crankcase cover is snug up against the crankcase surface. Do not try to force the cover into place with screw pressure. If the cover will not fit up against the crankcase, remove the crankcase cover and repeat Step 27.

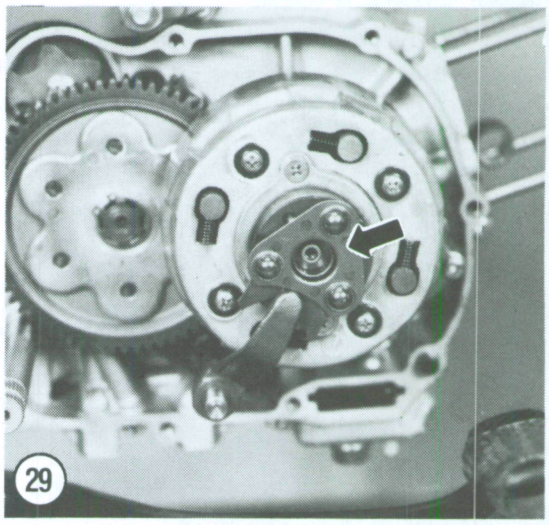
28. Refill the engine with the recommended type and quantity of oil; refer to Chapter Three.
29. Adjust the clutch as described in Chapter Three.

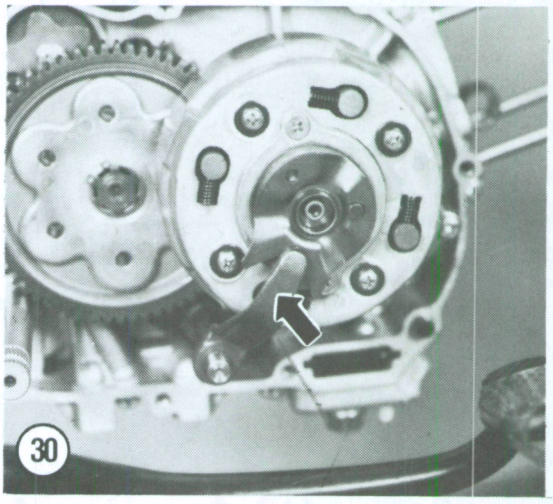
Removal/Disassembly (90-125 cc)

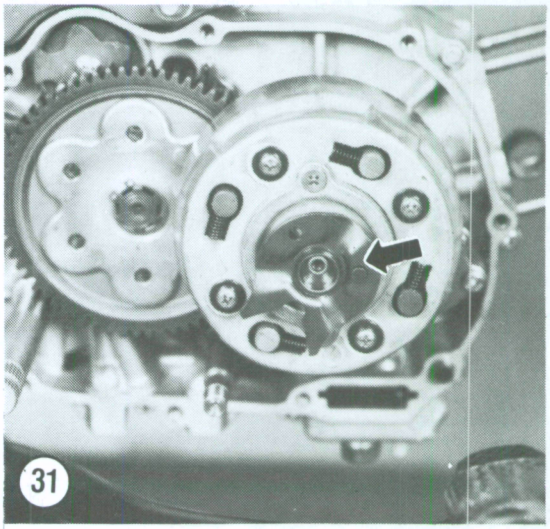
The centrifugal clutch shown in **Figure 28** is used on the following models:

a. All ATC90.
b. All ATC110.
c. ATC125M.

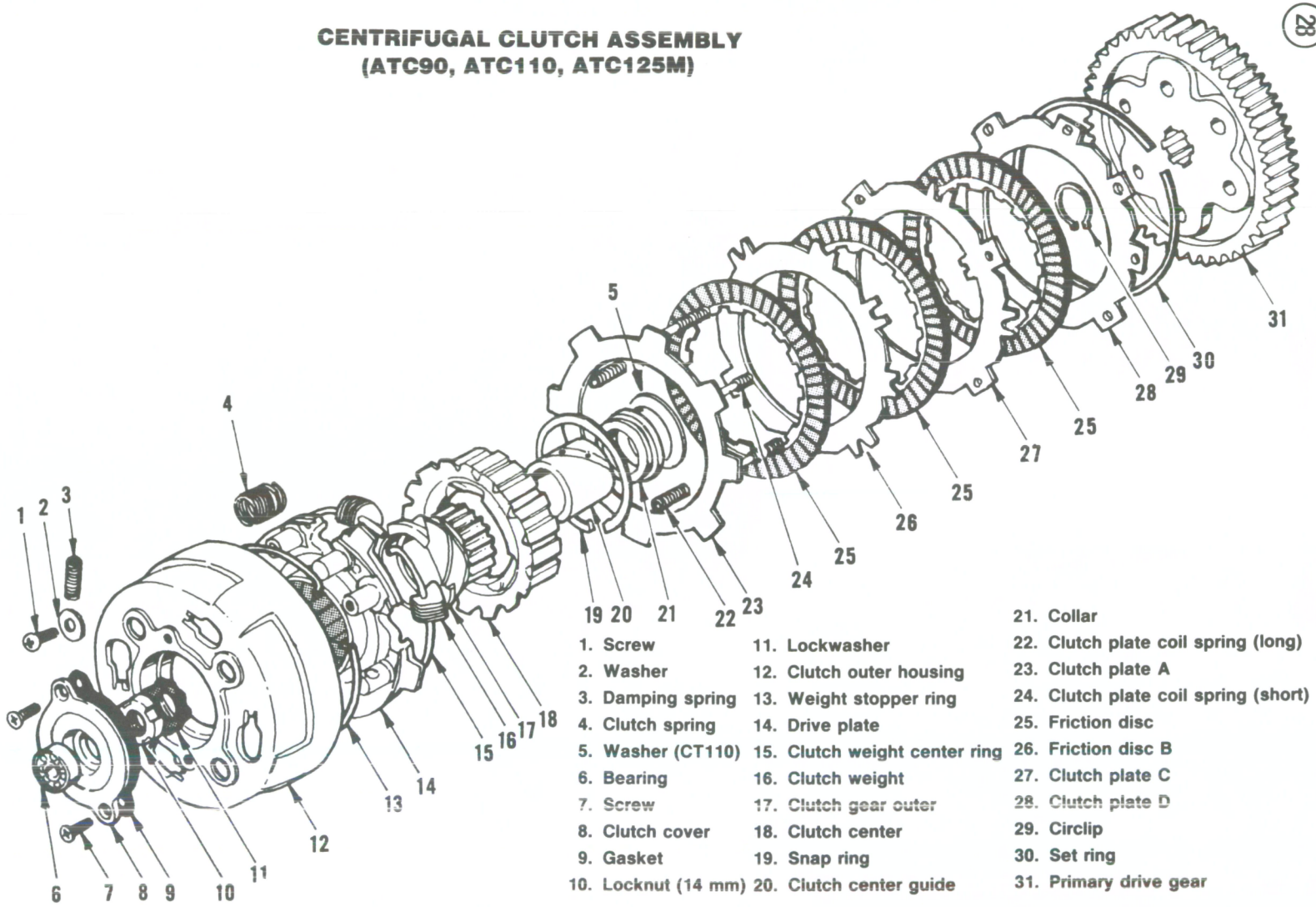
1. Drain the engine oil as described in Chapter Three.
2. Remove the bolts securing the right-hand crankcase cover.
3. Remove the ball retainer (**Figure 29**) and the spring.
4. Remove the oil guide and the spring.
5. Remove the clutch release lever (**Figure 30**).
6. Remove the cam plate assembly (**Figure 31**).



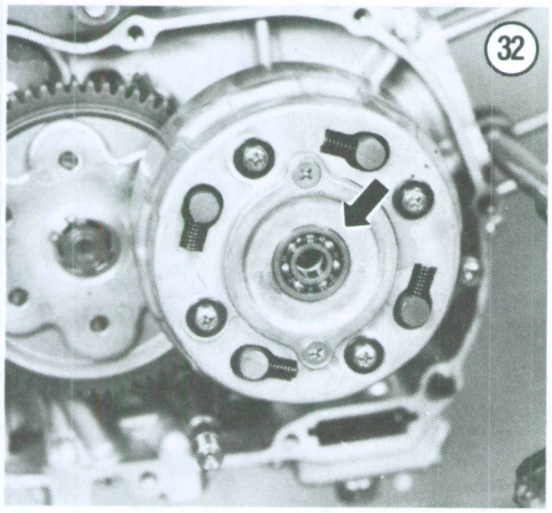


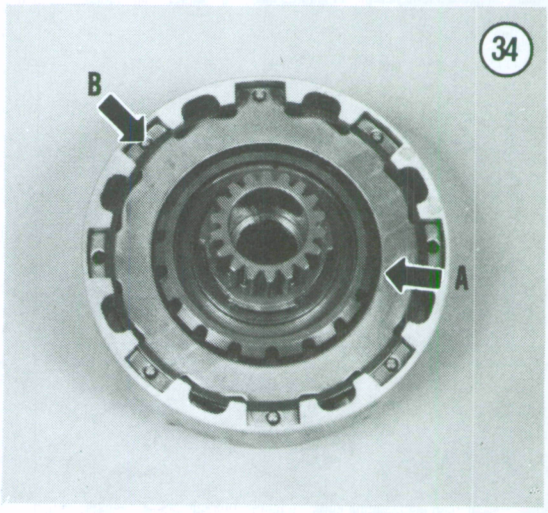


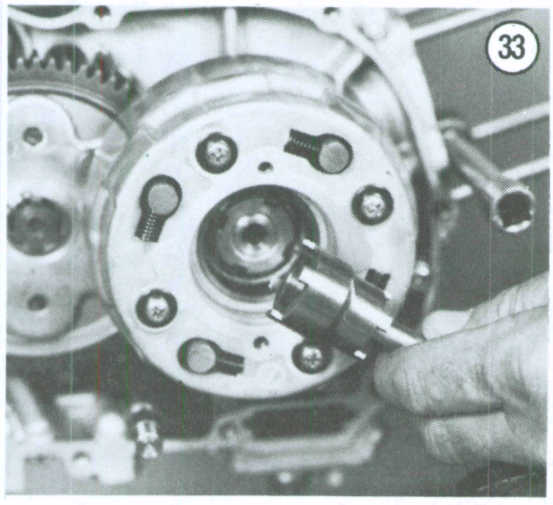
CENTRIFUGAL CLUTCH ASSEMBLY (ATC90, ATC110, ATC125M)

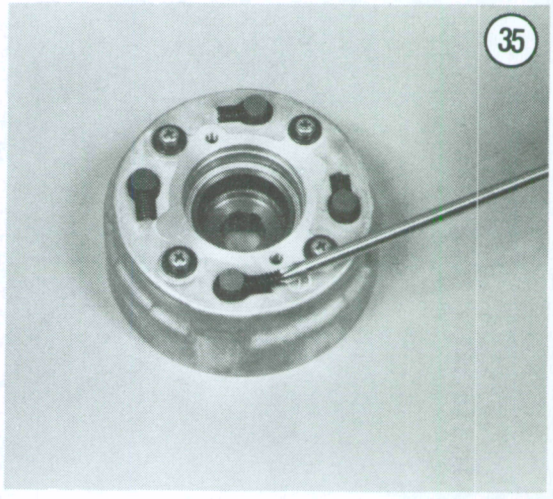


1. Screw
2. Washer
3. Damping spring
4. Clutch spring
5. Washer (CT110)
6. Bearing
7. Screw
8. Clutch cover
9. Gasket
10. Locknut (14 mm)
11. Lockwasher
12. Clutch outer housing
13. Weight stopper ring
14. Drive plate
15. Clutch weight center ring
16. Clutch weight
17. Clutch gear outer
18. Clutch center
19. Snap ring
20. Clutch center guide
21. Collar
22. Clutch plate coil spring (long)
23. Clutch plate A
24. Clutch plate coil spring (short)
25. Friction disc
26. Friction disc B
27. Clutch plate C
28. Clutch plate D
29. Circlip
30. Set ring
31. Primary drive gear









7. Remove the screws securing the clutch outer cover (**Figure 32**) and remove the cover and the bearing.

8. Straighten out the locking tab on the lockwasher.

9. Place a copper washer (or copper penny) into mesh with the primary driven gear and the primary drive gear. This will keep the clutch housing from turning during the next step. If the engine is partially disassembled, install a socket drive extension or piece of smooth metal rod into the piston pin hole in the connecting rod to keep the crankshaft and clutch from turning.

10. The clutch outer housing locknut removal requires a special tool available from a Honda dealer (Locknut Wrench part No. 07916-3710000) or a 16 mm double pin spanner (**Figure 33**) that is available from most motorcycle supply stores.

11. Remove the locknut and lockwasher securing the clutch outer housing in place. Remove the clutch outer housing and the copper washer from the engine.

12. From the backside of the clutch outer housing, press down on clutch plate "D" (A, **Figure 34**).

13. With a screwdriver, work the set ring (B, **Figure 34**) out of the grooves in the clutch outer housing and remove the set ring.

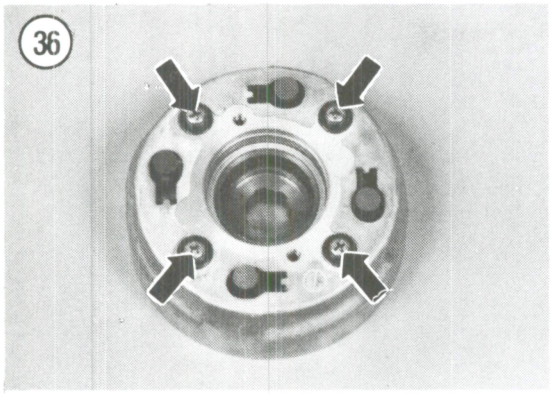
14. Remove the clutch plates and friction plates from the clutch outer housing.

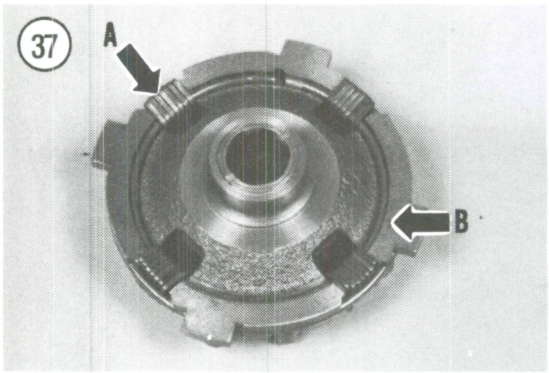
NOTE

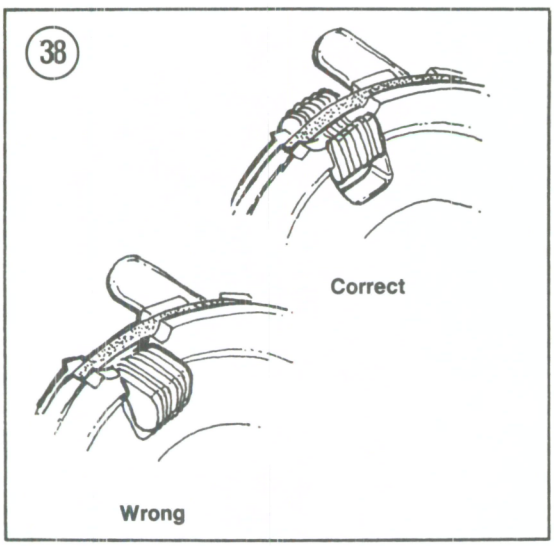
Don't lose the small coil springs mounted onto the pins on clutch plate "A."

15. Remove the clutch center assembly.

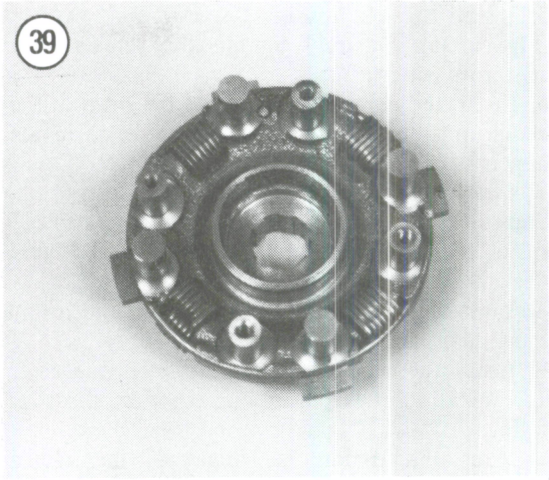
16. Remove the damper springs (**Figure 35**) from the front of the clutch outer housing.

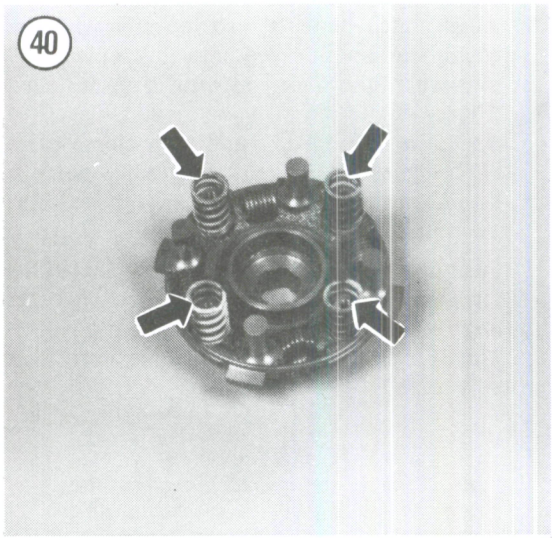






17. Loosen the Phillips screws (**Figure 36**) in a crisscross pattern then remove the screws and washers securing the drive plate assembly to the clutch other housing. Remove the drive plate assembly and the drive plate springs.
18. Inspect the clutch components as described in this chapter.





Assembly/Installation (90-125 cc)

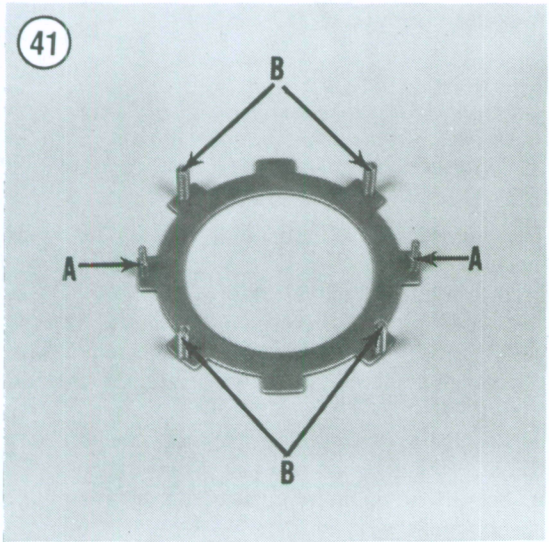
NOTE

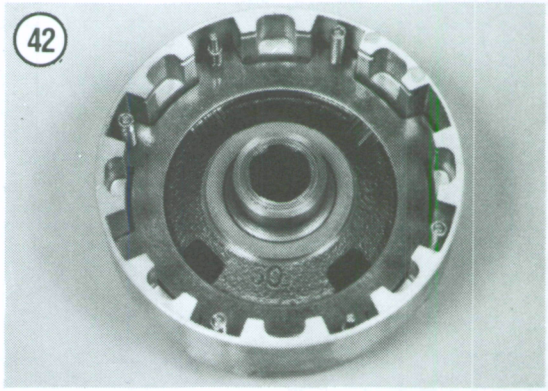
If either or both friction discs and clutch plates have been replaced with new ones, apply new engine oil to all surfaces to avoid having the clutch lock up when used for the first time.

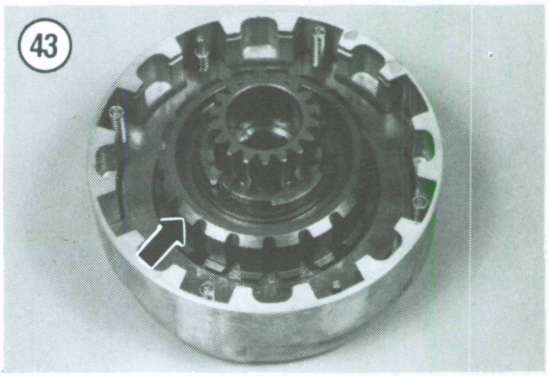
1. Assemble the clutch outer housing on your workbench.
2. If the clutch weight assembly (A, **Figure 37**) was removed from the drive plate (B, **Figure 37**), the clutch weight assembly must be reinstalled with the weights placed as shown in **Figure 38** and **Figure 39**.
3. Install the drive plate springs (**Figure 40**) onto the drive plate.
4. Set the clutch outer housing onto the drive plate springs and the drive plate.

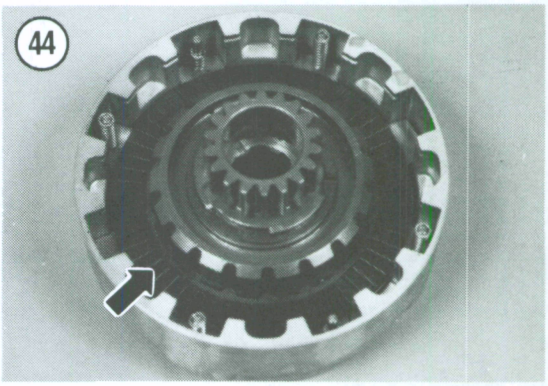
5. Install the Phillips head screws and washers (**Figure 36**). Securely tighten the screws in a crisscross pattern.
6. Install the damper springs into the front of the clutch outer housing and into the recesses in the fingers of the drive plate (**Figure 35**).
7. Install the short length small coil springs (A, **Figure 41**) on the middle pins of clutch plate "A." Install the long length small coil springs (B, **Figure 41**) onto the other pins of clutch plate "A."
8. Turn the clutch outer housing over and install the clutch plate "A" (**Figure 42**).
9. Install the clutch center assembly (**Figure 43**).
10. Install clutch plates and friction discs as follows:
   a. Install a friction disc (**Figure 44**) then clutch plate "B" (**Figure 45**).
   b. Install a friction disc and clutch plate "C." Align clutch plate "C" so the tabs with the small holes are installed onto clutch plate "A" pins where the *short* coil springs are installed (**Figure 46**).
   c. Install a friction disc and then clutch plate "D" (**Figure 47**). Make sure the small holes in the tabs of clutch plate "D" are indexed into the pins of clutch plate "A."
11. Push down on clutch plate "D" and install the set spring into the backside of the clutch outer housing. Work the set spring into the grooves in the clutch outer housing and make sure it is properly seated.

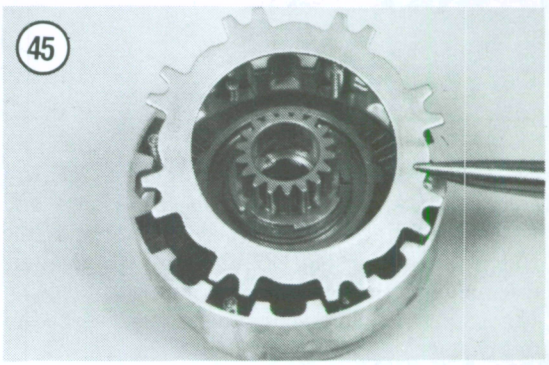
CAUTION
Install the set spring ends into one of the recesses with sharp corners as shown in

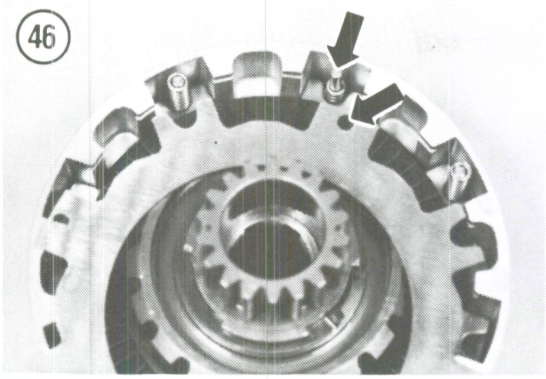


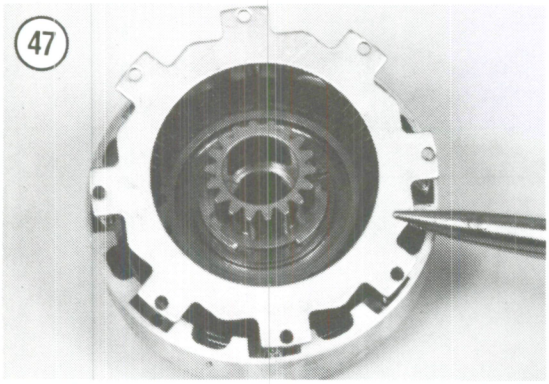


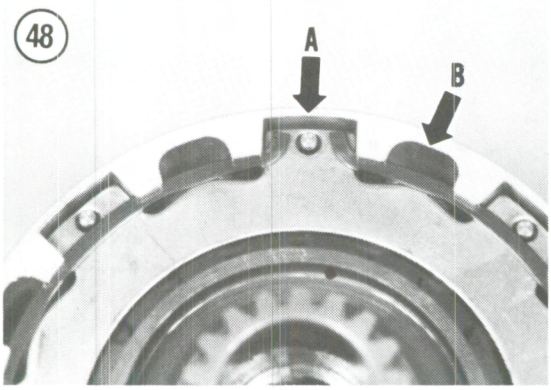


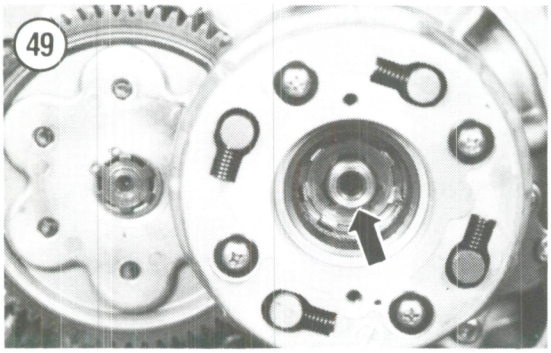






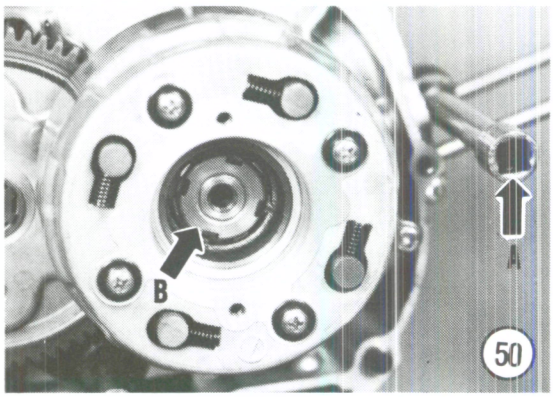


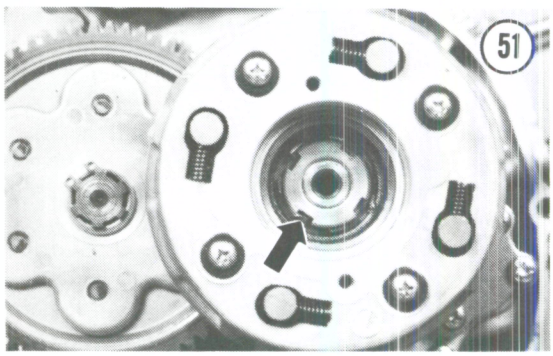




*A, **Figure 48**. **Do not** install into a recess with rounded corners (B, **Figure 48**) as the set spring will not seat properly into the grooves in the clutch outer housing and may work loose.*

12. Make sure the center guide bushing is installed in the primary drive gear.
13. If removed, install the collar and conical washer with the "OUTSIDE" mark facing out toward the clutch assembly onto the crankshaft.
14. Install the lockwasher (**Figure 49**).
15. Place a copper washer (or copper penny) into mesh with the primary drive gear and the primary driven gear. If the engine is partially disassembled, install a socket drive extenson (A, **Figure 50**) or smooth metal rod into the piston pin hole in the connecting rod to keep the crankshaft and clutch from turning.
16. Install the locknut (B, **Figure 50**) and tighten to 35-45 N•m (28-33 ft.-lb.). Use the same tool setup used in Step 10, *Removal*.
17. Bend one locking tab down into one of the grooves in the locknut (**Figure 51**). If the locking tab will not fit into a groove, tighten the locknut (*do not loosen*) until a locking tab will fit.
18. Install the clutch outer cover, bearing and new gasket. Tighten the screws securely (**Figure 32**).





19. Install the cam plate assembly (**Figure 31**).
20. Install the clutch release lever (**Figure 30**).
21. Install the spring and oil guide.
22. Apply a light coat of grease to the spring to hold the spring in place. Install the spring and the ball retainer (**Figure 29**).
23. Install the dowel pins and a new crankcase cover gasket.
24. Install the right-hand crankcase cover. Install the screws and tighten in a crisscross pattern until they are secure.

CAUTION

Do not install any of the crankcase cover screws until the crankcase cover is snug up against the crankcase surface. Do not try to force the cover into place with screw pressure. If the cover will not fit up against the crankcase, remove the crankcase cover and repeat Step 24.

25. Refill the engine with the recommended type and quantity of oil; refer to Chapter Three.
26. Adjust the clutch as described in Chapter Three.

CLUTCH INSPECTION (ALL MODELS)

Refer to **Table 1** for clutch specifications.

1. Clean all parts in a petroleum based solvent such as kerosene and thoroughly dry with compressed air.
2. Measure the free length of each clutch spring as shown in **Figure 52**. If any of the springs are worn to the service limit shown in **Table 1** they should be replaced. Replace all springs as a set.
3. Measure the thickness of each friction disc at several places around the disc as shown in **Figure 53**.
4. Replace any friction disc that is worn to the service limit shown in **Table 1**. For optimum performance, replace all friction discs as a set even if only a few need replacement.
5. Check the clutch plates for warpage on a surface plate such as a piece of plate glass (**Figure 54**). Replace any clutch plates that are warped to the service limit shown in **Table 1**. For optimum performance, replace all plates as a set even if only a few need replacement.
6. On 70 cc models, inspect the ramps in the drive plate (A, **Figure 55**) and the grooves in the clutch outer housing (B, **Figure 55**). If either show signs of wear or galling they should be replaced.
7. On 70 cc models, inspect the splines of the drive gear outer (A, **Figure 56**) and the clutch center (B, **Figure 56**). If either show signs of wear or damage they should be replaced.